JCB
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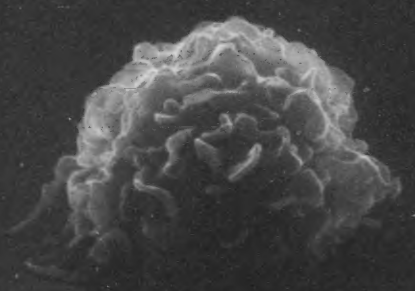

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A scanning electron micrograph shows a human monocyte attached to a VCAM-1–coated surface under fluid flow. Rullo et al. reveal that these cells resist detachment by rapidly polymerizing actin within an upstream structure that anchors them to the underlying substrate. Image courtesy of Jacob Rullo and Henry Hong.

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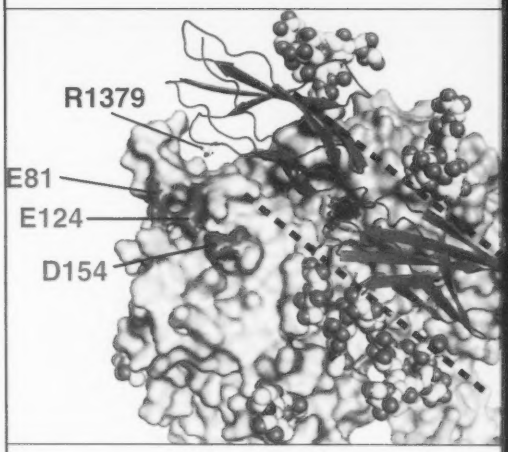

Nagae et al. present the crystal structure of the α5β1 integrin ectodomain. The structure suggests that the integrin's ligand, fibronectin (magenta ribbon model), lies in a "trench" on the surface of α5β1 (wheat and gray surface-rendered model) that is devoid of carbohydrate groups (yellow, red, and blue space-filling model). Image © 2012 Nagae et al.
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On the cover

Suraneni et al. reveal that fibroblasts require the Arp2/3 complex to form lamellipodia and undergo sustained directional migration. A wild-type cell (top right) spreads onto a surface by extending broad, ruffle-like lamellipodia rich in F-actin (red), whereas a cell lacking the Arp2/3 subunit ARPC3 (bottom left) forms thin, filopodia-like protrusions containing actin bundles. Image courtesy of Parveen Suraneni.
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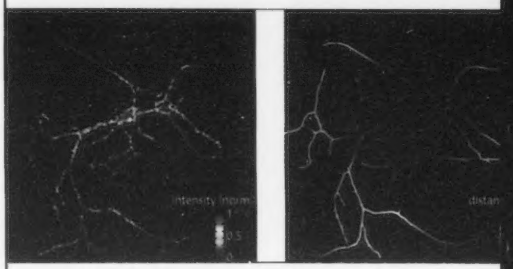
327 **Dendritic position is a major determinant of presynaptic strength**
Arthur P.H. de Jong, Sabine K. Schmitz, Ruud F.G. Toonen, and Matthijs Verhage



de Jong et al. reveal that the strength of presynaptic terminals depends on where they contact the postsynaptic dendritic tree. The left panel shows the relative numbers of synaptic vesicles at different locations on a postsynaptic neuron (grey). The right panel displays how far these locations are from the neuron's cell body. Presynaptic terminals contain more vesicles at positions closer to the postsynaptic cell soma.
© 2012 de Jong et al.
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On the cover

Inoko et al. reveal that the centriolar protein trichoplein activates Aurora A kinase to suppress the assembly of primary cilia in proliferating cells. Proliferating RPE1 cells (with nuclei labeled in blue) lacking trichoplein aberrantly form primary cilia (which are stained for acetylated tubulin, green) and undergo cell cycle arrest. Image courtesy of Akihito Inoko.
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421 Hic-5 promotes invadopodia formation and invasion during TGF-β–induced epithelial–mesenchymal transition
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457 Localized topological changes of the plasma membrane upon exocytosis visualized by polarized TIRFM
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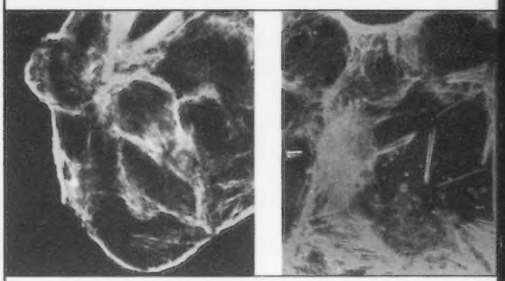

Compared to control cells (left), epithelial cells treated with TGF-β (right) form invadopodia, protrusive structures rich in F-actin (red) that degrade the underlying gelatin matrix (green). Pignatelli et al. demonstrate that invadopodia formation and cell invasion are promoted by the TGF-β–induced focal adhesion protein Hic-5.
Image © 2012 Pignatelli et al.
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523 Stoichiometry for binding and transport by the twin arginine translocation system
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The distribution of different phosphoinositides in a multinuclear osteoclast is revealed by the localizations of GFP-AktPH (green) and RFP-PLCδ1PH (red). AktPH binds the phosphoinositides PtdIns(3,4)P_2 and PtdIns (3,4,5)P_3, which are enriched in podosome-associated membrane protrusions that promote the fusion of osteoclast precursors. Image courtesy of Tsukasa Oikawa.
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535 **Mitochondrial division ensures the survival of postmitotic neurons by suppressing oxidative damage**
Yusuke Kageyama, Zhongyan Zhang, Ricardo Roda, Masahiro Fukaya, Junko Wakabayashi, Nobunao Wakabayashi, Thomas W. Kensler, P. Hemachandra Reddy, Miho Iijima, and Hiromi Sesaki

553 **Tks5-dependent formation of circumferential podosomes/invadopodia mediates cell–cell fusion**
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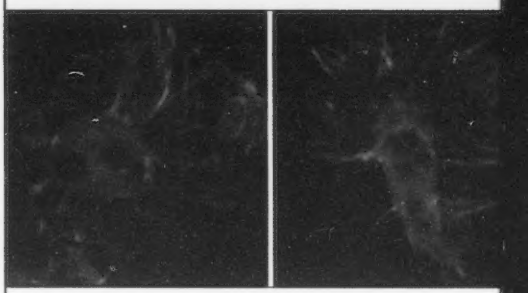

Zanet et al. reveal that fascin promotes filopodia formation independent of its ability to bundle actin filaments. A fascin-deficient *Drosophila* hemocyte (left) fails to form filopodial protrusions containing actin (green). Filopodia are restored (right) by a fascin point mutant lacking actin-bundling activity (magenta).
Image © 2012 Zanet et al.
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643 Stoichiometry of Nck-dependent actin polymerization in living cells
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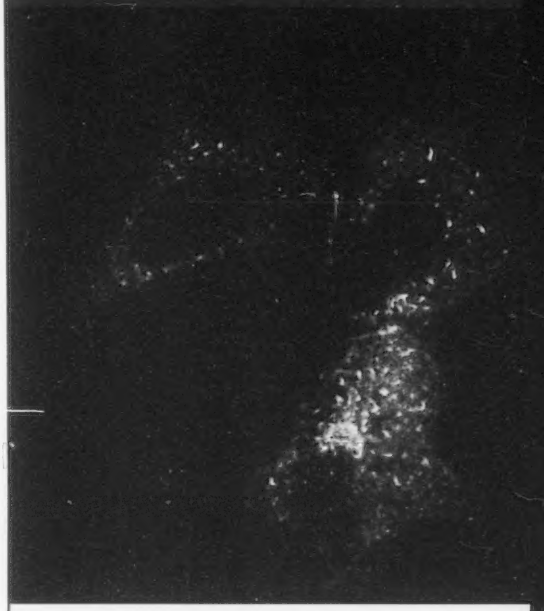

On the cover

Longatti et al. reveal that recycling endosomes contribute to the formation of autophagosomes in starving cells undergoing autophagy. Overexpression of the Rab GTPase-activating protein TBC1D14 (green) inhibits autophagosome biogenesis by tubulating recycling endosomes containing transferrin (blue) and the autophagy protein Atg13 (red).
Image courtesy of Christopher Lamb.
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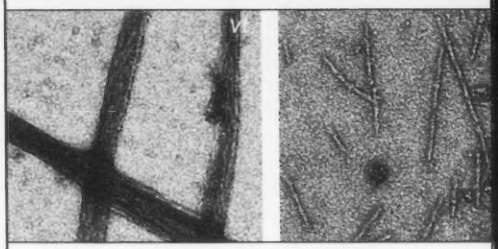
659 **TBC1D14 regulates autophagosome formation via Rab11- and ULK1-positive recycling endosomes**
Andrea Longatti, Christopher A. Lamb, Minoo Razi, Shin-ichiro Yoshimura, Francis A. Barr, and Sharon A. Tooze

677 **Basement membrane assembly of the integrin α8β1 ligand nephronectin requires Fraser syndrome–associated proteins**
Daiji Kiyozumi, Makiko Takeichi, Itsuko Nakano, Yuya Sato, Tomohiko Fukuda, and Kiyotoshi Sekiguchi



The C-terminal tail of vinculin organizes actin filaments into thick bundles (left), whereas the tail of metavinculin—a splice variant primarily expressed in smooth and cardiac muscle cells—severs actin into short, single filaments (right).
Image © 2012 Janssen et al.
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731 Nucleostemin maintains self-renewal of embryonic stem cells and promotes reprogramming of somatic cells to pluripotency
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747 Integrity of the P-site is probed during maturation of the 60S ribosomal subunit
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761 Aberrant substrate engagement of the ER translocon triggers degradation by the Hrd1 ubiquitin ligase
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775 F-actin polymerization and retrograde flow drive sustained PLCγ1 signaling during T cell activation
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Bruce D. Freedman, and Janis K. Burkhardt

789 The IFT-A complex regulates Shh signaling through cilia structure and membrane protein trafficking
Karel F. Liem Jr., Alyson Ashe, Mu He, Peter Satir, Jennifer Moran, Dave Beier
Carol Wicking, and Kathryn V. Anderson

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On the cover

Neuroepithelial cells from mouse embryos lacking the intraflagellar transport complex A protein IFT144 have short, disorganized primary cilia and show decreased activation of the Sonic hedgehog signaling pathway.
Image courtesy of Karel Liem and Leslie Gunther-Cummins.
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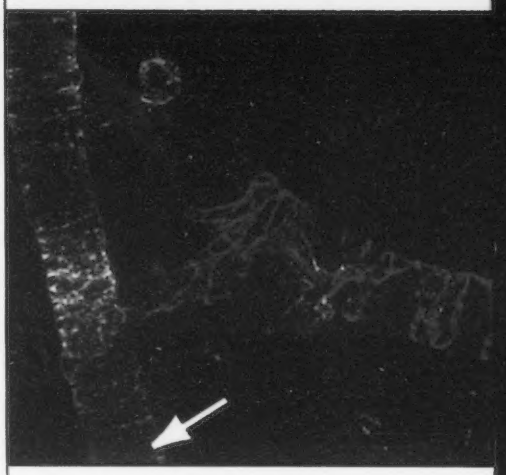
801 FGFR1 cleavage and nuclear translocation regulates breast cancer cell behavior
Athina-Myrto Chioni and Richard Grose

819 Arginylation-dependent regulation of a proteolytic product of talin is essential for cell–cell adhesion
Fangliang Zhang, Sougata Saha, and Anna Kashina

837 Smooth muscle–endothelial cell communication activates Reelin signaling and regulates lymphatic vessel formation
Sophie Lutter, Sherry Xie, Florence Tatin, and Taija Makinen



Lutter et al. reveal that the extracellular matrix glycoprotein Reelin regulates the development of lymphatic vessels by promoting the recruitment of smooth muscle cells (red) to lymphatic endothelial cells (blue). A blood vessel (arrow) is in the foreground.
Image © 2012 Lutter et al.
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877 Meiotic cohesin complexes are essential for the formation of the axial element in mice
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897 Human sperm bind to the N-terminal domain of ZP2 in humanized zonae pellucidae in transgenic mice
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907 Nuclear-localized focal adhesion kinase regulates inflammatory VCAM-1 expression
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921 Nuclear envelope morphology constrains diffusion and promotes asymmetric protein segregation in closed mitosis
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939 Arp2/3 complex–dependent actin networks constrain myosin II function in driving retrograde actin flow
Qing Yang, Xiao-Feng Zhang, Thomas D. Pollard, and Paul Forscher

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Telley et al. develop a cell-free assay to determine how nuclei disperse through the syncitium of early *Drosophila* embryos. Condensed chromosomes (red) align on a metaphase spindle (green) in a droplet of cytoplasm extracted from a preblastoderm embryo. After anaphase, the newly formed nuclei are spatially separated by the migration of the microtubule asters through the cytoplasm. Image courtesy of Ivo A. Telley.
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957 Kar3Vik1, a member of the Kinesin-14 superfamily, shows a novel kinesin microtubule binding pattern
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971 Lis1 is an initiation factor for dynein-driven organelle transport
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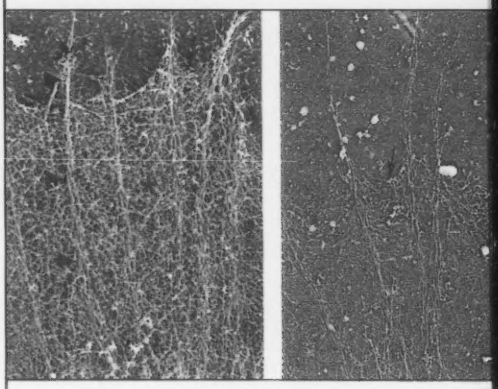
983 Rab5c promotes AMAP1–PRKD2 complex formation to enhance β1 integrin recycling in EGF-induced cancer invasion
Yasuhito Onodera, Jin-Min Nam, Ari Hashimoto, Jim C. Norman, Hiroki Shirato, Shigeru Hashimoto, and Hisataka Sabe

997 Follistatin-mediated skeletal muscle hypertrophy is regulated by Smad3 and mTOR independently of myostatin
Catherine E. Winbanks, Kate L. Weeks, Rachel E. Thomson, Patricio V. Sepulveda, Claudia Beyer, Hongwei Qian, Justin L. Chen, James M. Allen, Graeme I. Lancaster, Mark A. Febbraio, Craig A. Harrison, Julie R. McMullen, Jeffrey S. Chamberlain, and Paul Gregorevic

1009 Sarcospan-dependent Akt activation is required for utrophin expression and muscle regeneration
Jamie L. Marshall, Johan Holmberg, Eric Chou, Amber C. Ocampo, Jennifer Oh, Joy Lee, Angela K. Peter, Paul T. Martin, and Rachelle H. Crosbie-Watson

Corrections

1029 Cardiolipin defines the interactome of the major ADP/ATP carrier protein of the mitochondrial inner membrane
Steven M. Claypool, Yavuz Oktay, Pinmanee Boontheung, Joseph A. Loo, and Carla M. Koehler,



The leading edge of a control neuronal growth cone (left) contains both filopodial actin bundles (arrowheads) and a dense meshwork called the actin veil (asterisk). Treatment with an inhibitor of the Arp2/3 actin-nucleation complex (right) reduces the density of the actin veil and retracts its outer edge (arrow).
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